



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,903	08/11/2006	Thomas William Beck	2004P87074WOUS	7739
28524 7590 08/23/2007 SIEMENS CORPORATION INTELLECTUAL PROPERTY DEPARTMENT 170 WOOD AVENUE SOUTH ISELIN, NJ 08830			EXAMINER SHABMAN, MARK A	
			ART UNIT 2809	PAPER NUMBER
			MAIL DATE 08/23/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/597,903		BECK ET AL.	
	Examiner		Art Unit	
	Mark Shabman		2809	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on N/A is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ford US patent 4,767,539 (hereinafter referred to as Ford) in view of Van Hoof NL 1021197 C6 (hereinafter referred to as Van Hoof).

Regarding **claim 1**, Ford discloses a method of Cleaning of Hollow Fiber Filters Utilized in Lumenal Gas Flow. The membrane filter described in Ford is used for filtration of a liquid suspension and removal of solids within by passing the liquid through a membrane to produce a permeate while leaving solids entrapped in the membrane pores as in column 7 lines 21-30. This method of membrane filtration is well known in the art as a method of applying a pressure to one side of the membrane forcing the liquid suspension through to the other side thus filtering out unwanted solids. This method is further described in column 7 lines 20-30 and shown in examples 1-11 as seen in columns 3-7. This reads on "providing a pressure differential across the walls of permeable, hollow membranes immersed in the liquid suspension, said liquid suspension being applied to the outer surface of the porous hollow membranes to induce and sustain filtration through the membrane walls wherein: some of the liquid

suspension passes through the walls of the membranes to be drawn off as permeate from the hollow membrane lumens, and at least some of the solids are retained on or in the hollow membranes or otherwise as suspended solids within the liquid surrounding the membranes”

The disclosed cleaning of said membrane to remove solids trapped within the pores is accomplished by a method of back-washing the hollow fiber filters with gas to remove particles which may become entrapped within the membrane as discussed in column 1 lines 65-68. In order for the gas to permeate through the membrane filter, it is understood that the pressure would have to be below the bubble point. This reads on “backwashing the membrane pores by applying a gas at pressure below bubble point to liquid permeate within the membrane lumens to displace the liquid permeate within the lumens through the membrane pores”.

Example 8 of Ford as seen in column 6 lines 22-35 describes a method of use of the backwashing method in which a liquid suspension is filtered through a membrane for a set amount of time before being backwashed and reintroducing the flow of the liquid suspension. The reintroduction of flow post-backwash reads on the claimed “refilling membrane lumens with liquid” and “recommencing said filtration through the lumens. Ford does not disclose a method of testing the integrity of the membrane during the backwash phase of the cleaning process.

The Derwent English translation of Van Hoof describes a method of measuring integrity of filter membrane, comprising creating a volume of gas on the filtrate side, increasing the pressure on the feed side to create a pressure drop and measuring the

Art Unit: 2809

increase in pressure on the filtrate side. The method involves filling the filtrate side of the membrane with gas to a constant level and increasing the feed side to a gas level of higher pressure. The pressure on the feed side decreases as the gas moves through the filter and into the filtrate side. The change in rising pressure of the filtrate side is then measured and compared to a reference value. The feed side in this case reads on the "lumen side" and the filtrate side reads on the "other side" as claimed. In order to increase the pressure on the feed side of the membrane, the area must be isolated to ensure pressure does not escape therefore reading on "isolating the lumen side of the membranes." The determination of integrity of the membranes is based on a difference in changing pressure between to sides of the membrane in direct correlation with one another. It would have been obvious to one of ordinary skill in the art at the time of invention to measure the drop in gas pressure on the lumen side of the membrane rather than the increase in pressure on the other side since the initial reference pressure is increased on the feed side and could be measured both before and after with ease by locating the pressure transmitter there. Figure 1 of Van Hoof also shows an embodiment in which the pressure transmitter is located on the feed side. It would have been obvious to one of ordinary skill in the art at the time of invention to combine the integrity test of Van Hoof with the backwashing process of Ford since the introduction of gas into the lumen fibers is already occurring and membrane fouling is a common issue in membrane filtration processes that can lead to poor quality filtration over time.

Regarding **claim 2**, Ford discloses a periodic backwashing of the membranes based on decreased flow rate through the lumen fibers as solids are trapped that can occur on a schedule or automatically as a result of flow volume passing through the membrane as described in column 3 lines 54-55. It would have been obvious to one of ordinary skill in the art at the time of invention to perform the integrity check during each cycle of the backwashing process since a volume of gas is already being introduced to the system to permeate through the lumens.

Regarding **claim 3**, Ford discloses a periodic backwashing of the membranes based on decreased flow rate through the lumen fibers as solids are trapped that can occur on a schedule or automatically as a result of flow volume passing through the membrane as described in column 3 lines 54-55. It would have been obvious to one of ordinary skill in the art at the time of invention to change this schedule to test the integrity after a set number of backwash cycles if the liquid suspension is not necessarily harmful to the membrane, thus reducing the total amount of time spent during the backwash/integrity testing cycle.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ford in view of Van Hoof as applied to claim 1 above, and further in view of Selbie US Patent 6,202,475 B1.

Ford in view of Van Hoof describes the invention in its entirety with the exception of "said predetermined value corresponds to a logarithmic reduction value of 4." Selbie discloses a method of Predicting Logarithmic Reduction Values involving gas moving

Art Unit: 2809

through a membrane. It would have been obvious to one of ordinary skill in the art at the time of invention to use the method of Selbie to predetermine a reference value having a logarithmic reduction value of 4 to ensure that the filter operates as close to 100 percent efficiency as possible, or if replacement it necessary.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Shabman whose telephone number is (571) 270-3263. The examiner can normally be reached on M-F 7:30am - 5:00pm, EST (Alternating Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Pendleton can be reached on (571) 272-7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/597,903

Page 7

Art Unit: 2809

MS


BRIAN TYRONE PENDLETON
SUPERVISORY PATENT EXAMINER